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REMARKS

Claims 1-4 and 6-14 are all the claims presently pending in the application. Claim 1 is amended to more clearly define the invention, claim 5 is canceled, and claims 1 and 6 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicants also note that, notwithstanding any claim amendments herein or later during prosecution, Applicants' intent is to encompass equivalents of all claim elements.

Entry of this §1.116 Amendment is proper. Since the Amendments above narrow the issues for appeal and since such features and their distinctions over the prior art of record were discussed earlier, such amendments do not raise a new issue requiring a further search and/or consideration by the Examiner. As such, entry of this Amendment is believed proper and Applicant earnestly solicits entry. No new matter has been added.

With respect to the prior art rejections, claims 1-3, 11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903). Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Imagi et al (US 5,650,697). Claims 5 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Chen (US 6,589,018). Claims 6 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Bingler (US 2003/0209343). Claims 6 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Faris (US 4,206,719). Claims 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Matsui et al (WO0213357, translated by US 6,900,574). Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Moreira et al (US 6,051,952). Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Erdman et al (US 2003/0098660) in view of Hancock et al (US 5,015,903) and further in view of Jorgensen (US 4,962,734).

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These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The invention as recited in independent claim 1, for example, is directed to a fan motor, that includes a single-phase stepping motor including a stator excited by applying an electric current to a coil to function as a single-phase magnetic pole, and a rotor which has a permanent magnet magnetized to a single phase and rotates as the magnetic pole of the stator changes, an impeller which is rotated by a rotating shaft of the rotor, a drive circuit for controlling an application of a current to the coil, and a coupling mechanism which couples the impeller to the rotating shaft relatively and rotatably, wherein the coupling mechanism couples the impeller slidably to the rotating shaft of the rotor, causes the rotating shaft to race with respect to the impeller at a time of starting the motor, and causes the impeller to rotate by following a rotation of the rotating shaft by friction during a steady operation. The drive circuit applies pulse voltage to the coil and the coil constant is set so that a mean value of the current applied to the coil is 10 mA or smaller (Application at page 5, lines 4-16).

With this structure, it is possible to drive the impeller to rotate using low current (Application at page 4, line 24-page 5, line 1).

In a conventional fan motor, as described in the Background of the present Application, use of a stepping motor to drive the impeller at low current was not possible due to the large moment of inertia (Application at page 1, line 12-page 2, line 23). Moreover, use of brushless motors requires a Hall element to detect the rotor position which results in a large current consumption (Application at page 4, lines 1-9)

In contrast, an exemplary aspect of the claimed invention may provide a fan motor including a stepping motor, thereby having an increased useful life while operating a low current consumption and at low noise levels (Application at page 4, line 24-page 5, line 1).

None of the applied references discloses or suggests this invention.

II. THE PRIOR ART REJECTIONS

A. The Rejection of Claim 5:

The Examiner admits Erdman et al., and Hancock et al., fail to teach or suggest the subject matter of claim 5. The Examiner asserts that Chen discloses the feature of Claim 5. However, Applicant respectfully disagrees.

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Chen discloses a female connector of an impeller 9 press fitted around an output shaft 34. However, Chen does not teach or suggest causing the rotating shaft to race with respect to the impeller at a time of starting the motor, and causing the impeller to rotate by following a rotation of the rotating shaft by friction during a steady operation. As shown in Fig. 6 of Chen, the impeller and the output shaft are fixed together by a screw. This structure makes the above operation (racing and rotating) impossible.

B. The Rejection of Claim 6:

The Examiner admits Erdman et al., and Hancock et al., fail to teach or suggest the subject matter of claim 6.

The Examiner asserts that Bingler or Faris disclose the features of Claim 6. However, Applicant respectfully disagrees.

That is, neither Bingler nor Faris discloses causing the rotating shaft to race with respect to the impeller at a time of starting the motor, and causing the impeller to rotate by following a rotation of the rotating shaft during a steady operation, as in claim 6.

Further, none of the other cited references makes up for the deficiencies of the above-identified references.

Thus, all of claims 1-4 and 6-14 are patentable.

III. FORMAL MATTERS AND CONCLUSION

Applicants again respectfully request acknowledgement and consideration of JP 2-100631 and JP 61-11390 submitted in an Information Disclosure Statement on May 3, 2004. As pointed out in the Information Disclosure Statement, these references are discussed in the Background of the present Application as Patent Documents 1 and 6, respectively. That is, the concise explanation of relevance is satisfied by such description in the Application. Attached hereto is another copy of the PTO-1449 Form for the Examiner to initial.

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-4 and 6-14, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

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CERTIFICATION OF FACSIMILE TRANSMISSION

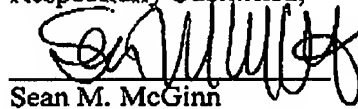
I hereby certify that I am filing this Amendment by facsimile with the United States Patent and Trademark Office to Examiner Renata McCloud, Group Art Unit 2837 at fax number 571-273-8300 this 20th day of August, 2007.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date: _____

8/20/07

Respectfully Submitted,



Sean M. McGinn
Registration No. 34,386

McGinn Intellectual Property Law Group, PLLC
8321 Old Courthouse Rd., Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254